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To: Bobby Carroll

Through: Doug Winters

For: Alan Auwarter

From: ESAT, Region IV Biological Assistance Team

Document Title/Description: On the Technical Memorandum from CDM Federal Programs Corporation concerning Robbins AFB-RI/FS Zone 1, Operable Unit 2, Aquatic Biology.

MEMORANDUM

SUBJECT: Technical Memorandum from CDM Federal Programs Corporation concerning Robbins AFB-RI/FS Zone 1, Operable Unit 2, Aquatic Biology.

FROM: Biological Assessment Team

TO: Bobby J. Carroll
Regional Project Manager

THROUGH: Doug Winters
ESAT Team Manager

FOR: Alan Auwarter
Head Toxics Evaluation Section

Review: On the Technical Memorandum from CDM Federal Programs Corporation concerning Robbins AFB-RI/FS Zone 1, Operable Unit 2, Aquatic Biology.

We have reviewed the Aquatic Biology section of the Technical Memorandum of the RI/FS for Robbins AFB, Warner Robbins, GA. and found in general that the work was adequate. No obvious gaps exist in the data, but we do have concerns about certain anomalies in the data from toxicity tests. However, none of these concerns are strong enough to warrant additional investigation or to deter remediation. None-the-less, it would be beneficial to address these concerns in the final report.

Concern 1. Section 2.4 (p. 2-5) states that for sediment tests "survival, growth, and development of test organisms exposed to site sediment were compared to laboratory organisms." However, in the Table 3-12 summarizing the results of the sediment tests, only survival data is presented. Data on growth and development is missing...

Concern 2. What methods were used for conducting sediment toxicity tests? The test results for *Hyalella azteca* are presented as "percent responding." This is a bit confusing and makes it difficult to compare this data with the data for *Lumbriculus variegatus*. Presenting the data for *Hyalella* as percent survival would seem to be more appropriate and less confusing. Also, in Table 3-12 why are *Hyalella* values for wetland samples statistically significant at 9%, 14%, and 24% and not significant at 9% and 18%.

Concern 3. In Table 3-11, the test results for *Ceriodaphnia dubia* on sample S9-SW seem to be contradictory. If the NOEC is < 6.25 , it seems very unusual that the

LC50 is > 100 or vice versa. These results are also inconsistent with the statement in Section 3.4.6 that identifies sample S9 as showing "both chronic and acute toxicity."

Another area of major concern is the Rapid Bioassessment. Again, none of the concerns are strong enough to warrant additional sampling, and, in fact, the sampling was more than adequate. It is the analysis of the data, as it is presented in the memorandum, that raises some questions.

Concern 1. Ideally, an RBP Protocol III focuses on a riffle/run habitat "because is the most productive habitat available in stream systems and includes many pollution-sensitive taxa of the Scraper and Filtering Collector Functional Feeder Group." Considering the obvious lack of riffle/run habitat in Zone 1, the "HD" collection method is an acceptable sampling technique. However, the subsequent comparison of the ~~collected~~ data from the comparatively still water of the pond and wetland areas of Zone 1 to the flowing waters of the first order stream used as a reference is more questionable. This situation is very close to comparing " apples to oranges." ~~The data already collected, on the other hand, by no means should be totally rejected.~~ A lentic (still-water) system would not be expected to score very well against a lotic (flowing-water) system. A more appropriate comparison would be to compare only data from Zone B (stations S1, S2, S3, S4, S5, & S6) on Horse Creek to the reference stream. The still-water areas of Zone 1 (Area I and part of Area II) ideally should be compared to a separate still-water reference area.

Concern 2. Technically, the data collected from the CT samples is used incorrectly. "The CPOM [=CT] sample is processed separately from riffle/run sample and used only for characterizing the Functional Feeding Group representation [RBP manual,EPA 444/4-89-001]." This means that the CT data is used only in the calculation of metric 6. Calculation of all other metrics (eg. Taxa Richness, EPT index etc.) should not use CT data and therefore the CT columns displayed in Tables 3-8, 3-9, and 3-10 are unnecessary and incorrect. Subsequently, these extra "CT" calculations should not be included when determining the Biological Condition Category assigned to each study area (see below).

Concern 3. The workup of the data collected for the RBP Protocol III is incomplete. Scores for the eight metrics should be totaled and a Biological Condition Category assigned to each study area based on percent comparability with the reference station score. Table 6.4-3 on p. 6-34 of the RBP Protocol manual (EPA 444/4-89-001) demonstrates the correct manipulation of the metric scores and lists the resulting Biological Condition Categories (see Fig 6.3-4, p. 6-27 of same manual).

The Discussion section is fine, although the subsection on the Rapid Bioassessment may require alteration based on the results of analyzing the data correctly as indicated above. Also, under section 4.4, RECOMMENDATIONS FOR FURTHER ANALYSIS, one may consider the value of leaving Zone I undisturbed as a possible course for remediation. Eventhough Area I and Area II may be impacted, the fact that high levels of suspected toxic materials have accumulated in the sediments of Area I, relatively less material has accumulated in the sediments of Area II, and virtually little, if any, of these substances bioaccumulated in the top of the aquatic

food chain,(ie predatory fish), indicates that the wetlands are coping with the influx of suspected toxic materials and serve as a effective "sink" or even an effective "trap" for site-derived materials. Therefore, rather than requiring "Further analysis ... to more precisely define whether or not contaminants from the landfill or sludge lagoon are the major cause of impairment to the aquatic habitats in Areas I and II," the most beneficial (and cost-effective) course for further action might be no action at all.